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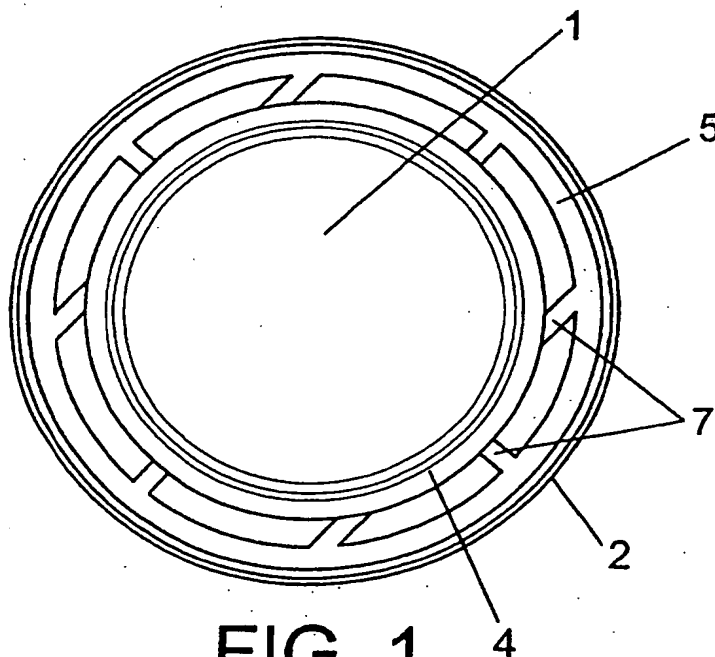
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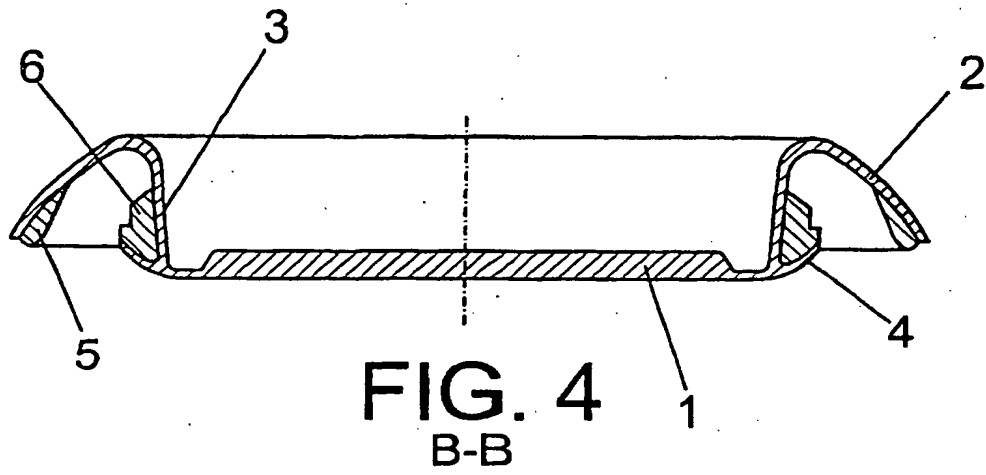
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(54) **Plug for sealing orifices**

(57) The sealing plug is particularly intended for sealing orifices in metal plates, such as in the body of an automobile, and is comprised of a pan-shaped body (1) that can be fitted tightly in said orifice and that is provided with a peripheral diverging flap (2). The sealing plug incorporates two sealing rings (5) and (6); the former ring is placed under the peripheral flap (2) and the second is placed between the corresponding neck of the pan-shaped part (1) and a small inner flap (4),

with the two rings of melting material (5) and (6) left on the inside and joined to each other by ribs (7), although they can also be joined to each other by a common band, defining a continuous single body that covers the inner part of the flap (2), the neck (3) and the flap (4) of the body (1). In addition to defining a double seal of the orifice in which the sealing plug is applied, the two rings (5) and (6) provide by their inner arrangement a simple assembly in said orifice.

**FIG. 1**



## Description

### OBJECT OF THE INVENTION

[0001] The present invention relates to a plug that is specifically designed to close and seal an orifice of a plate, and that is particularly well suited for sealing orifices made in the body of an automobile.

[0002] The object of the invention is to obtain, on one hand, a correct and efficient closure or seal of the orifice involved, and in addition to achieve a perfect tightness and insulation between the inner and outer parts defined on either side of the orifice and thus of the sealant plug inserted in it.

### BACKGROUND OF THE INVENTION

[0003] Various forms are known for sealing orifices made in car body plates or in other elements. In this sense may be cited in first place Spanish invention patent ES2006404, which describes a plastic sealing lid for an opening of an automobile body plate, based on the lid including a peripheral sealing lip in an inclined arrangement and an elastic locking ring opposite said lip, so that the latter rests of the perimeter of the element or plate having the orifice in which the lid fits, while the locking ring rests on the bottom face of said plate or element in question. Likewise, this invention patent claims as one of its fundamental characteristics that provided beneath the locking ring is a support that can be embodied by another elastic lip, which presses against the locking ring to keep the latter permanently in contact with the corresponding surface of the element or plate in which the orifice is made that is sealed by the lid, in order to achieve a tight seal.

[0004] Although these types of seals are simple, it is obvious that the tightness is not always appropriate or optimal, due to the deformation or possible breakage of the support element and the locking ring.

[0005] In order to improve tightness of the seal, Spanish invention patent ES2097565 describes another elastic sealing lid that includes a heat-deformable gasket and lid anchoring lugs, although it is obvious that the gasket must be heated to provide an optimum seal.

[0006] Similarly, Spanish invention patent 2125148 describes a plug-seal for a plate orifice in which, regardless of the configuration of the lid that constitutes said plug-seal, one of its main novelties is that it is provided by a sealing cord that melts with heat, thereby achieving an optimum tightness in the closure.

[0007] Likewise, Spanish utility model 1022542 describes a plug for an opening made in a plate that also incorporates a gasket or a cord with flexible glue that also melts with heat, as well as deformable flaps for anchoring in the assembly of the plug on the corresponding opening.

[0008] In every case, the problem shared by the aforementioned plugs is that none provides an acoustic or

thermal seal, as well as providing a complex insertion as the deformable flaps, tabs or hooks incorporated in the various cases do not ensure an ideal reliability, as well as being complex.

5 [0009] To solve these drawbacks patents EP63192 and EP779203 describe corresponding sealing plugs provided with two sealing bands made of a melting material or glue, so that when the sealing plug is inserted in the orifice of the corresponding plate a first sealing area is established on the support of the external peripheral lip of the plug body on the upper surface of the plate, with the interposed glue or melting material and sealing, while a second sealing band is defined by a concentric ring provided on the neck of the sealing plug itself, so that in this case the seal is established between the orifice perimeter and the ring-shaped melting band or cord on the neck of the sealing plug, thereby providing an improved tightness and an optimum insulation between the two parts defined on either side of the orifice that is closed by the device described.

10 [0010] However, the drawbacks of the solutions described in EP631923 and EP779203 is that the glue or melting material is placed outside the body of the sealing plug, which causes problems during the assembly on the corresponding orifice as the cutting operation used to make the orifice produces a burr that will define the first area of contact when applying or introducing the sealing plug on said orifice, so that as the glue or melting material is soft when it meets the burr it will be "anchored" by said burr, which will require a specific form of assembly that is not always possible.

### DESCRIPTION OF THE INVENTION

35 [0011] The sealing plug object of the invention has been designed to solve the aforementioned drawbacks such that, based on the concept of defining a double seal on the orifice in which the plug is inserted, it is characterised in that the rings made of glue or melting material instead of being placed externally are placed internally. That is, the part that will comprise the sealing plug is formed with the plastic or melting material placed on its inside, thereby preventing any initial contact between the burr resulting from drilling the orifice and the soft melting material, to provide an easy, simple and efficient assembly as well as the aforementioned double sealing, as there will be on one hand a ring under the curved external peripheral flap of the sealing plug, and on the other a second ring that, as the first, is made of a melting material or glue and that is placed in a neck provided in the sealing plug, such that both rings can be joined by evenly spaced rings or may form a single piece.

40 [0012] In addition to the aforementioned advantage of the double sealing provided by the sealing plug of the invention and the specific arrangement of the rings that will provide said double sealing, also noteworthy is that an improved protection against rusting and an improved

acoustic insulation will be obtained, as the thickness is increased of either the melting material layer or the non-melting material layer, that is, of the part that defines the sealing plug itself.

### DESCRIPTION OF THE DRAWINGS

[0013] As a complement of the present description and in order to aid a better understanding of the characteristics of the invention, in accordance with a preferred example of embodiment, an accompanying set of drawings is provided as an integral part of the description in which, for purposes of illustration only and in a non-limiting manner the following is shown:

Figure 1 shows a general perspective view of a sealing plug made according to the object of the invention, where the two rings that provide the double seal are joined to each other by ribs.

Figure 2 shows a plan view of the sealing plug of the previous figure.

Figure 3 shows a sectional view along the line A-A of the previous figure.

Figure 4 shows another sectional view, in this case along the line B-B of said figure 2.

Figure 5 shows another perspective view of the sealing plug of the invention in which the two sealing rings are joined to each other by a continuous material band forming a single body.

Figure 6 shows a diametric sectional view of the sealing plug shown in the previous figure.

Figure 7 shows, finally, a practical application of the sealing plug applied on an orifice of a plate, corresponding to the embodiment shown in figures 1 to 4.

### PREFERRED EMBODIMENT OF THE INVENTION

[0014] In view of the above described figures, and particularly of figures 1 to 4, it can be seen that the sealing plug of the invention is comprised of a pan-shaped body (1) made of a plastic semi-rigid material, in which is defined a peripheral flap (2) derived from the neck (3) formed by the pan-like form of the body (1) and, opposite the peripheral flap (2), a small flap (4) which, as the previous one, diverges outwards, with the two flaps oriented in opposite directions as is clearly shown in figures 3 and 4.

[0015] One of the main novelties of the invention is that the body (1) incorporates two rings (5) and (6) made of a melting material or glue, the first of which is placed in correspondence with the inner surface of the peripheral flap (2) and the second between the neck (3) and

the flap (4).

[0016] These two rings (5) and (6) of melting material or glue can be joined to each other by ribs (7), as shown clearly in figures 1 and 2.

[0017] In an alternative embodiment shown in figures 5 and 6, the rings (5) and (6) of melting material or glue are joined to each other by a continuous band (7'), instead of the ribs (7) as mentioned before, which continuous band (7') determines together with the rings (5) and (6) an inner lining of the area comprised between the inner flap (4) and the neck (3), as well as a lining of all of said neck and the inner surface of the peripheral diverging flap (2), as clearly shown in figures 5 and 6.

[0018] Obviously, there may be any number of ribs (7) and in any configuration, and even when the ribs (7) are embodied as an intermediate continuous band (7') this band may be provided with corresponding ribs.

[0019] With the solution provided by the two embodiments described, the sealing plug of the invention can be easily assembled in its application on the orifice (9) of a plate (8), as represented in figure 7, which shows the support and sealing at two areas defined by the rings (5) and (6), in the first case resting on the surface of the plate (8) and in the second resting on the inner perimeter of the orifice (9), thereby achieving a double sealing and a perfect tightness and insulation of the two sides of the plate (8), or what is the same of the aforementioned sealing plug, all of this without any difficulty of assembly as the first contact in the assembly on the orifice (9) takes place without any contact with the rings (5) and (6), as they are placed under the flaps (2) and (4) of the sealing plug, thus allowing to perform the assembly in any position, without having to change said position.

### Claims

1. Plug for sealing orifices, particularly designed to seal orifices made in plates such as those of automobile bodies, of the type comprising a pan-shaped body with an diverging peripheral outer flap and incorporating two rings of a melting material such as glue, in order to provide two corresponding sealing areas on the orifice of the plate on which it is applied, characterised in that said sealing rings (5) and (6) are placed both on the inside of the peripheral outer flap (2) of the sealing plug body (1) and on the inside of a second inner flap (4), in order to enable assembly on the corresponding orifice (9) of the plate (8) without any initial contact between the soft material of the rings (5) and (6) comprised of melting material and the burr formed when drilling the orifice (9).
2. Plug for sealing orifices, according to claim 1, characterised in that the two sealing rings (5) and (6) are joined to each other by ribs (7).

3. Plug for sealing orifices, according to claim 1, characterised in that the sealing rings (5) and (6) are joined to each other by a continuous band (7'), defining a continuous single body with said sealing rings (5) and (6).

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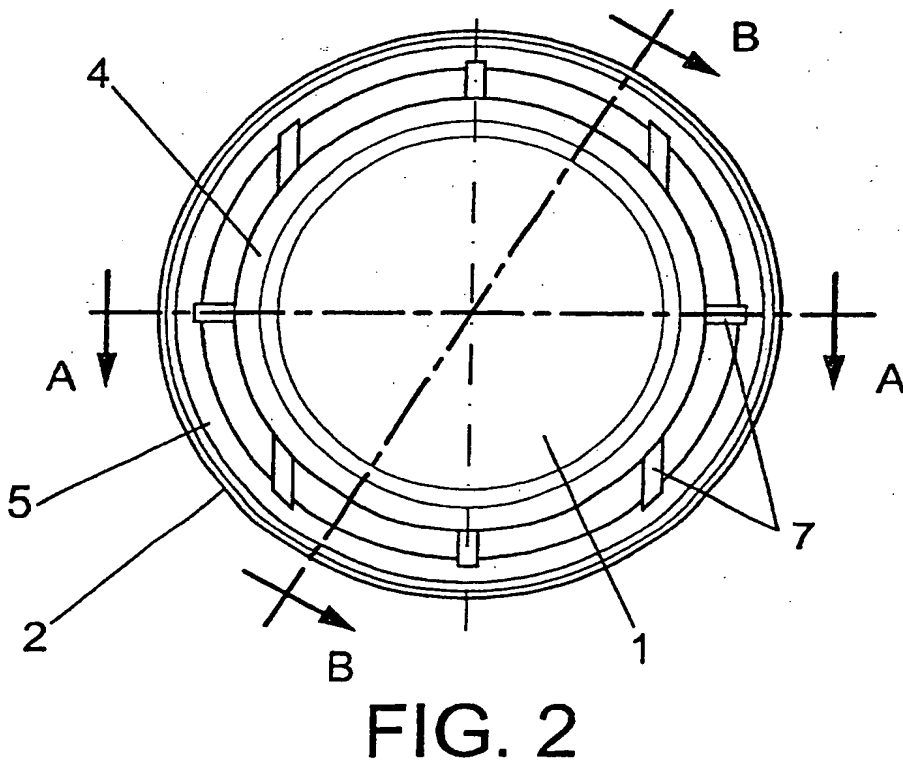
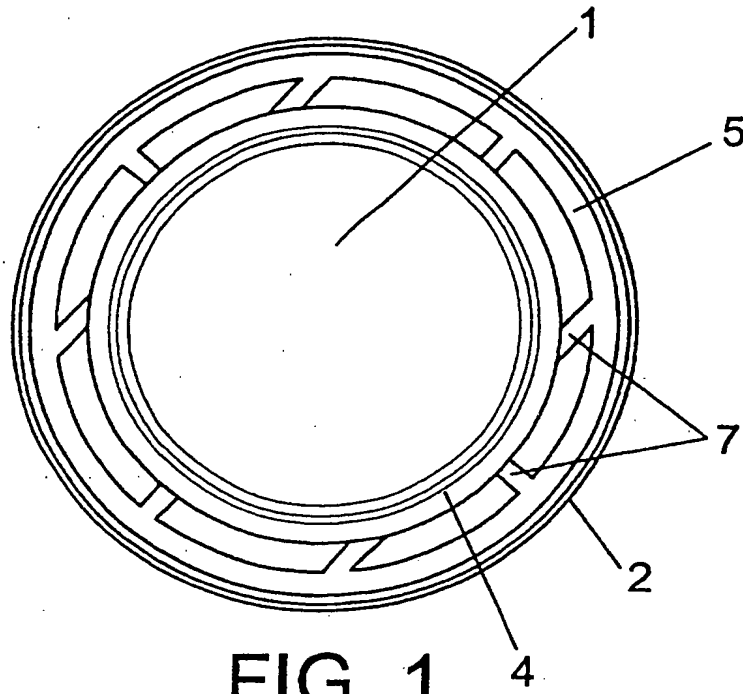
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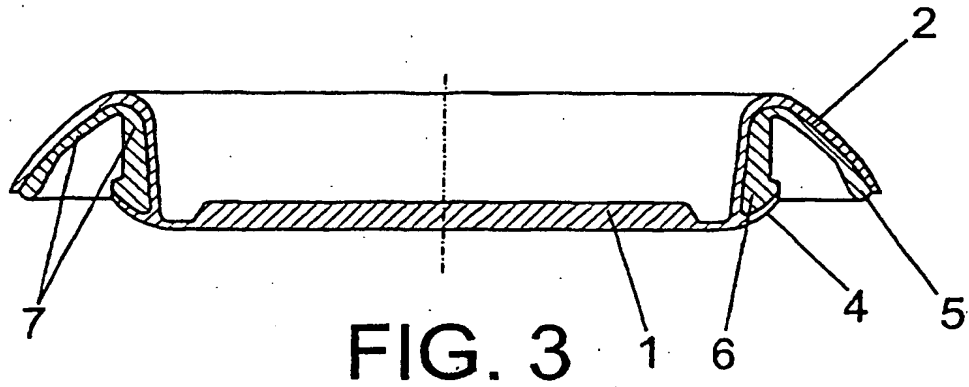


FIG. 3

A-A

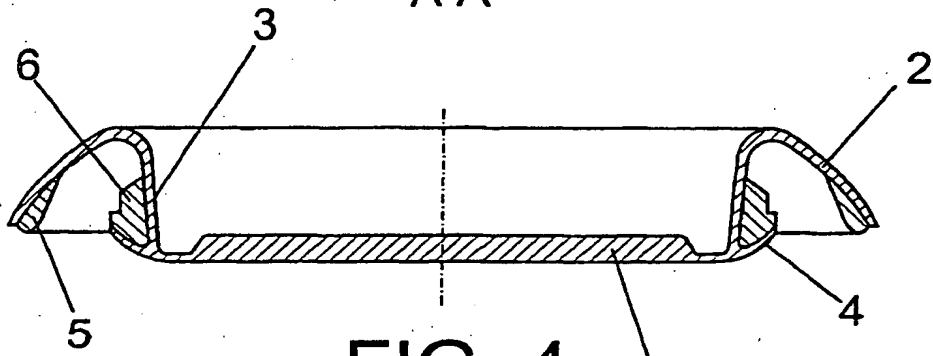


FIG. 4

B-B

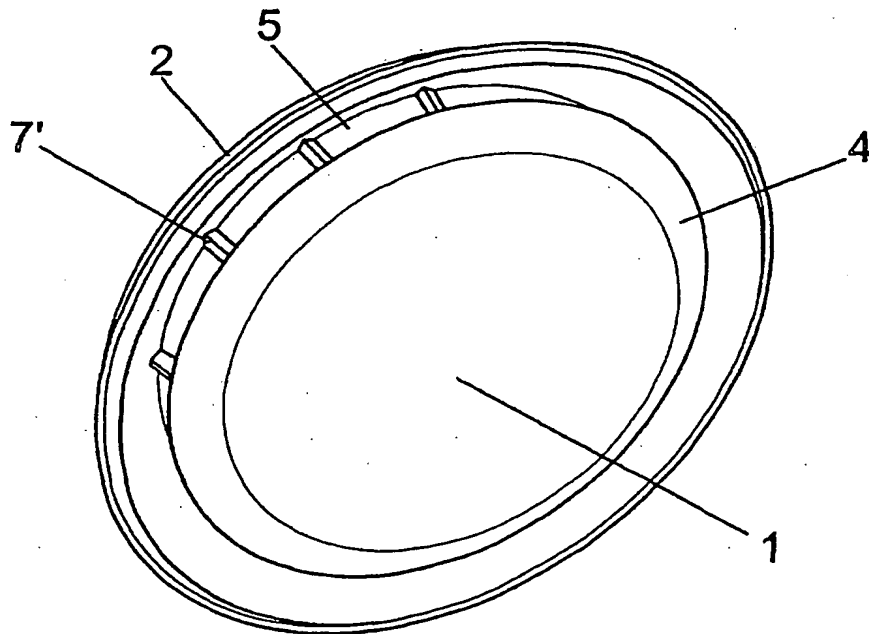
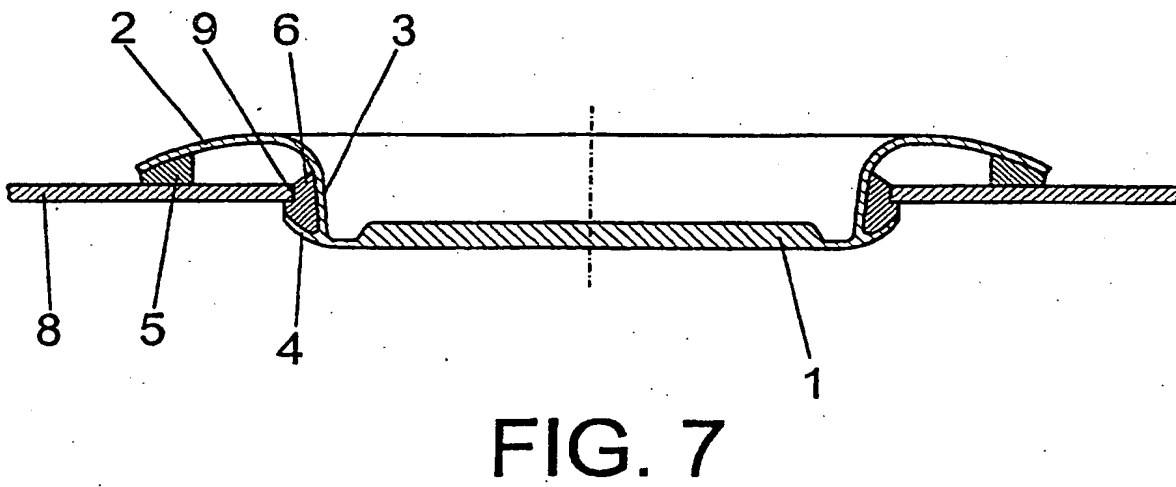
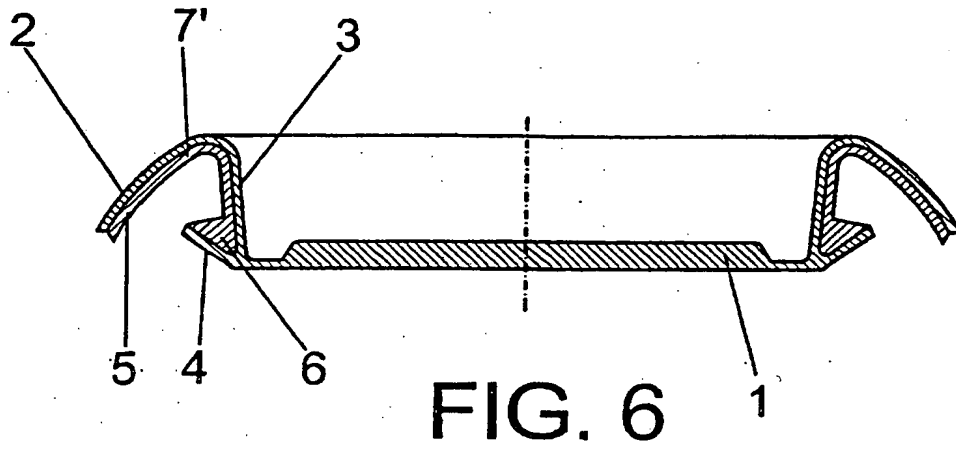


FIG. 5







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## EUROPEAN SEARCH REPORT

Application Number  
EP 02 38 0131

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A, D	ES 2 125 148 A (ITW ESPANA SA) 16 February 1999 (1999-02-16) * abstract; figures *	1	B62D25/24
A	PATENT ABSTRACTS OF JAPAN vol. 015, no. 065 (M-1082), 15 February 1991 (1991-02-15) -& JP 02 293278 A (NIFCO INC), 4 December 1990 (1990-12-04) * abstract *	1	
A	US 4 801 040 A (KRAUS WILLIBALD) 31 January 1989 (1989-01-31) * abstract; figures 1,2 * * column 2, line 16 - line 62 *	1	
D	& ES 2 006 404 A (TRW) 16 April 1989 (1989-04-16)		
A	US 4 363 420 A (ANDREWS SYDNEY A) 14 December 1982 (1982-12-14) * abstract; figures 4,5 *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B62D
Place of search	Date of completion of the search	Examiner	
THE HAGUE	17 October 2002	Westland, P	
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 38 0131

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-10-2002

Patent document cited in search report			Publication date	Patent family member(s)	Publication date
ES 2125148	A	16-02-1999	ES	2125148 A1	16-02-1999
JP 02293278	A	04-12-1990	JP	2834767 B2	14-12-1998
US 4801040	A	31-01-1989	DE	3713503 C1	14-01-1988
			ES	2006404 A6	16-04-1989
			FR	2614276 A1	28-10-1988
			GB	2204923 A ,B	23-11-1988
			NL	8800680 A ,B,	16-11-1988
			SE	468248 B	30-11-1992
			SE	8801484 A	23-10-1988
US 4363420	A	14-12-1982	FR	2507277 A1	10-12-1982
			GB	2067253 A	22-07-1981
			DE	3100498 A1	14-01-1982

EPO FORM P449

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82